

**REMARKS**

Claims 1-20 are pending in this application. By this amendment, claims 4, 11, and 12 have been amended and new claims 21 to 23 have been added. Thus, claims 1-23 are pending and at issue.

**I. STATUS OF THE AMENDMENT**

Claims 11 and 12 have been objected to under 37 C.F.R. 1.75 and rejected under 35 U.S.C. § 112. The drawings have been objected to under 37 C.F.R. 1.83(2). Claims 1, 3, 5-8, and 12-18 have been rejected under 35 U.S.C. § 102(b) as anticipated by Bernstein (U.S. patent 5,452,268); claims 1-3, 5-10, and 12-18 have been rejected under 35 U.S.C. § 102(b) as anticipated by Loeppert et al. (U.S. patent 5,870,482); claims 2, 4, 9, 11, and 19-20 have been rejected under 35 U.S.C. § 103 as unpatentable over Bernstein (U.S. patent 5,452,268); and new claims 21-23 have been added. In light of the following remarks and foregoing amendments, applicants respectfully submit that the above-identified application is in condition for allowance. Applicants respectfully solicit reconsideration and withdrawal of the claim rejections and allowance of claims 1-23.

**II. CLAIM OBJECTIONS**

Claims 11 and 12 are objected to as duplicative of claims 4 and 5, and rejected as lacking antecedent basis. Claims 11 and 12 have been amended to correct an inadvertent typographical error and now depend from claim 8. Thus, the duplication of claims 4 and 5 has been corrected. Further, amended claims 11 and 12 find proper antecedent basis at line 1 of claim 8. Applicants submit that no new matter has been added. For these reasons, the objections and rejections have been traversed, and should be withdrawn.

**III. DRAWING OBJECTIONS**

The Office action objected to the drawings, specifically that the drawings do not show a rib having a generally triangular cross section. The applicants respectfully traverse this objection and request reconsideration. Detailed illustration is not essential for a proper understanding of the invention.<sup>1</sup> Moreover, 35 U.S.C. § 113 states that a drawing is required where necessary for the understanding of the subject matter to be patented. Thus, although the drawings illustrate a rib with a squared cross section, one of ordinary skill in the art would understand that this structure can be modified to include a generally circular or triangular cross sections, as both of these structures are well understood. Applicants assert that no drawing showing a rib with a generally triangular cross section is required for one of ordinary skill in the art to understand the subject matter claimed. For these reasons, applicants respectfully submit that the objection has been traversed, and should be withdrawn.

**IV. CLAIM REJECTIONS - 35 U.S.C. § 112**

The Office action rejected claims 11 and 12 under 35 U.S.C. § 112, second paragraph, as lacking antecedent basis for "the microphone." As discussed in Section II above, this rejection has been traversed and should be withdrawn.

**V. CLAIM REJECTIONS - 35 U.S.C. § 102**

Claims 1, 3, 5-8, 10, 12-14, and 15-18 have been rejected under 35 U.S.C. § 102(b) as anticipated by Bernstein (U.S. patent 5, 452, 268). Applicants respectfully traverse these rejections.

Claims 1 and 8, as well as dependent claims 2-7 and 9-14, recite a device comprising, *inter alia*, a generally planar thin-film and a sidewall supporting the film,

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<sup>1</sup> See 37 C.F.R. 1.83(a)

wherein the sidewall has at least one rib formed therein. For example, as illustrated in FIG. 2, a thin film plate 12 may be supported by a sidewall 14 having a plurality of periodic ridges 20 and grooves 22.

Bernstein does not disclose a planar thin film supported by a sidewall. Bernstein discloses a raised planar thin film supported by a plurality of individual footings. The footings do not resemble a wall in appearance, function or construction, rather they constitute individual supports which do not serve to enclose, surround, or divide an area.<sup>2</sup> Just as one would not mistake individual beams within a wall for the wall itself, the footings disclosed in Bernstein do not constitute a sidewall. Thus, Bernstein anticipates neither claims 1 and 8, nor any claim dependent thereon.

Similarly, claim 15, and dependent claims 16-18, recites a raised microstructure comprising, *inter alia*, a generally planar element, and a sidewall that supports the planar element, wherein the sidewall has a plurality of ribs formed therein. As described above, Bernstein does not teach a sidewall, but instead discloses individual supporting elements or footings. For this reason, Bernstein anticipates neither claim 15, nor any claim dependent thereon.

Claims 1-3, 5-10, and 12-18 have been rejected under 35 U.S.C. § 102(b) as anticipated by Loeppert et al. (U.S. Patent No. 5, 870, 482). Applicants respectfully traverse these rejections.

Claims 1 and 8, as well as dependent claims 2-7 and 9-14, recite a device comprising, *inter alia*, a generally planar thin-film and a sidewall supporting the film, wherein the sidewall has at least one rib formed therein. Loeppert et al. does not

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<sup>2</sup> See Bartleby.com, *The American Heritage Dictionary of the English Language: Fourth Edition*, <http://www.bartleby.com/61/74/W0017400.html> (accessed June 20, 2004).

disclose a sidewall having at least one rib formed therein. Loeppert et al. simply discloses a thin-film cantilever structure including a diaphragm 12 anchored to a support structure 11 and extending over a portion of an opening. Even if we assume, *arguendo*, that the support structure is a sidewall, Loeppert et al. does not disclose a rib formed therein. Loeppert et al. discloses corrugation formed within the diaphragm, and *not the sidewall*, to increase stiffness of the cantilever diaphragm. Thus, the Loeppert et al. does not anticipate claims 1 or 8 or any claim dependent thereon.

Similarly, claim 15, and dependent claims 16-18, recite a raised microstructure comprising, *inter alia*, a generally planar element and a sidewall that supports the planar element, wherein the sidewall has a plurality of ribs formed therein. As described above, Loeppert et al. does not disclose a sidewall, much less a sidewall incorporating rib structures, but instead includes ribs or corrugation formed within the cantilever diaphragm. Therefore, Loeppert et al. anticipates neither claim 15 nor any claim dependent thereon.

## **VI. CLAIM REJECTIONS - 35 U.S.C. § 103**

Claims 2, 4, 9, 11, 19 and 20 have been rejected under 35 U.S.C. § 103 as unpatentable over Bernstein. Claims 2, 4, 9, and 11 recite a raised microstructure for use in a silicon device comprising, *inter alia*, a generally planar thin-film supported by a sidewall containing at least one rib, wherein the sidewall is corrugated or has a generally triangular cross-section. Claims 19 and 29 further recite a raised microstructure for use in a silicon based device comprising, *inter alia*, a generally planar element supported above a substrate by a sidewall having a plurality of ribs, wherein the ribs follow a periodic path of the periphery or further wherein that path is arcuate.

Bernstein fails to establish a *prima facie* case of obviousness<sup>3</sup> because it fails to teach or suggest each and every limitation of the claims. In particular, Bernstein does not teach the use of a sidewall to support a planar thin-film. Though it does not limit the shape of the footings disclosed, it would not have been obvious to one skilled in the art to substitute a sidewall of the shapes claimed in the current invention in place of the footings disclosed in Bernstein. Bernstein does not recognize the need and benefit realized by supporting the footings to thereby strengthen and prevent bending due to the intrinsic tension of the film. Instead, the footings disclosed in Bernstein merely serve the purpose of supporting the perforated bridge electrode member (the planar thin-film) above the diaphragm.

By way of contrast, the claimed raised microstructure and microphone may use a sidewall having the recited cross section to strengthen the sidewalls, and prevent bending caused by tension in the diaphragm. Further, when applied in the context of a silicon based microphone, the strengthened sidewall design reduces inherent deflection of the raised thin-film, improving microphone sensitivity and performance.

Because Bernstein does not establish a *prima facie* case of obviousness by disclosing the use of a sidewall to support a planar thin-film, Bernstein cannot render the raised microstructure of claims 2, 4, 9, 11 and 19-20 obvious. In particular, Bernstein does not recognize the benefit achieved by stiffening the planar thin-film

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<sup>3</sup> To establish a *prima facie* case of obviousness, three basic criteria must be met:

- (a) First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.
- (b) Second, there must be a reasonable expectation of success.
- (c) Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

See MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria.

using a sidewall having ribs formed therein. For these reasons applicants respectfully submit that the claims above are allowable and the rejection should be withdrawn.

# **VII. CONCLUSION**

For these foregoing reasons, applicants submit the application is in condition for allowance. If there are any additional fees or refunds required, the Commissioner is directed to charge or debit Deposit Account No. 13-2855. Reconsideration and withdrawal of the rejections are therefore respectfully requested.

Respectfully submitted for,

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June 25, 2004

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